CLAIMS

1. An image forming apparatus comprising:

an image forming section that forms and holds an unfixed toner image on a recording medium fed to an image forming area; and

a heat-fixing apparatus that heats the recording medium transported from the image forming area in a predetermined fixing area and heats the unfixed toner image onto the recording medium; wherein

said heat-fixing apparatus has:

an image heating body that heats the unfixed toner image on the recording medium;

a heat-producing section that heats said image heating body;

a temperature sensor that detects a temperature of said image heating body; and

a calorific value control section that controls a calorific value of said heat-producing section based on the temperature detected by said temperature sensor so that the temperature of said image heating body is maintained at an image fixing temperature suitable for heat-fixing the unfixed toner image onto the recording medium; and

said image forming apparatus has an image forming operation control section that controls an image forming operation of said image forming section so that

heat-fixing of the unfixed toner image onto the recording medium is started at predetermined timing before the temperature detected by said temperature sensor reaches the image fixing temperature.

2. The image forming apparatus according to claim 1, wherein a thermal time constant of said temperature sensor is 1/20 or more of a warm-up time necessary for the temperature of said image heating body to rise to the image fixing temperature.

3. The image forming apparatus according to claim 1, wherein at least part of said image heating body has electrical conductivity and said heat-producing section comprises an excitation section that heats said image heating body directly by means of electromagnetic induction.

4. The image forming apparatus according to claim 1, wherein said heat-producing section comprises:

a rotatable heat-producing member at least part of which has electrical conductivity and is in contact with said image heating body and heats said image heating body indirectly; and

an excitation section that heats said heat-producing member by means of electromagnetic induction.

5. The image forming apparatus according to claim 1, wherein

said image forming operation control section starts the image forming operation by said image forming section based on timing at which the temperature of said image heating body reaches a predetermined temperature, or timing at which elapsed time after a start of operation of said heat-fixing apparatus reaches a predetermined time, whichever timing is earlier.

6. The image forming apparatus according to claim 1, wherein said image forming operation control section starts the image forming operation of said image forming section only when the temperature of said image heating body following an elapse of a predetermined time after a start of operation of said heat-fixing apparatus is a temperature within a predetermined range.

7. The image forming apparatus according to claim 1, further comprising a voltage detecting section that detects a power supply voltage and wherein said image forming operation control section starts the image forming operation of said image forming section following an elapse of a predetermined time after a start of operation of said heat-fixing apparatus only when the power supply voltage detected by said voltage detecting section at a time of a start of the image forming operation of said

image forming section is greater than or equal to a predetermined voltage.

8. The image forming apparatus according to claim 1, further comprising a voltage detecting section that detects a power supply voltage and wherein said image forming operation control section changes a predetermined time until the image forming operation of said image forming section is started after said heat-fixing apparatus starts operating in accordance with the power supply voltage detected by said voltage detecting section at a time of a start of the image forming operation of said image forming section.

9. The image forming apparatus according to claim 1, further comprising an environmental temperature sensor that detects an environmental temperature of a body of said image forming apparatus and wherein said image forming operation control section starts the image forming operation of said image forming section following an elapse of a predetermined time after a start of operation of said heat-fixing apparatus only when the environmental temperature detected by said environmental temperature sensor at a time of a start of the image forming operation of said image forming section is greater than or equal to a preset predetermined temperature.

10. The image forming apparatus according to claim 1, further comprising an environmental temperature sensor that detects an environmental temperature of a body of said image forming apparatus; wherein said image forming operation control section changes a predetermined time until the image forming operation of said image forming section is started after said heat-fixing apparatus starts operating in accordance with the environmental temperature detected by said environmental temperature sensor at a time of a start of the image forming operation of said image forming section.

11. The image forming apparatus according to claim 1, wherein said image forming operation control section changes a predetermined time until the image forming operation of said image forming section is started after said heat-fixing apparatus starts operating in accordance with processing speed at a time of the image forming operation of said image forming section.

12. The image forming apparatus according to claim 1, wherein

said calorific value control section controls the calorific value of said heat-producing section, based on the temperature detected by said temperature sensor, so that the temperature of said image heating body is maintained at the image fixing temperature suitable for

heat-fixing the unfixed toner image onto plain paper used as the recording medium.

13. The image forming apparatus according to claim 1, wherein said image heating body is configured as a belt-shaped member.

14. The image forming apparatus according to claim 1, wherein said temperature sensor comprises a temperature measuring element that detects a temperature of said image heating body, and a nonmetallic elastic body that supports said temperature measuring element and is in contact with said image heating body at low pressure.

15. The image forming apparatus according to claim 14, wherein said elastic body is a sponge.

16. The image forming apparatus according to claim 14, wherein said temperature measuring element is a thermistor.

17. An image forming method comprising:

an image forming step of an image forming section forming and holding an unfixed toner image on a recording medium fed to an image forming area; and

a heat-fixing step of a heat-fixing apparatus heating the recording medium transported from the image

forming area in a predetermined fixing area and fixing the unfixed toner image onto the recording medium; wherein

said heat-fixing step has:

a step of an image heating body heating the unfixed toner image on the recording medium;

a step of a heat-producing section heating said image heating body;

a step of a temperature sensor detecting a temperature of said image heating body; and

a step of a calorific value control section controlling a calorific value of said heat-producing section based on the temperature detected by said temperature sensor so that the temperature of said image heating body is maintained at an image fixing temperature suitable for heat-fixing the unfixed toner image onto the recording medium; and

said image forming method has a step of an image forming operation control section controlling the image forming operation of said image forming section so that heat-fixing of the unfixed toner image onto the recording medium is started at predetermined timing before the temperature detected by said temperature sensor reaches said image fixing temperature.